

LA-UR 01-11

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TRANSIMS Activity Generator

Paula Stretz and the TRANSIMS team

08 January 2001

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TRANSIMS

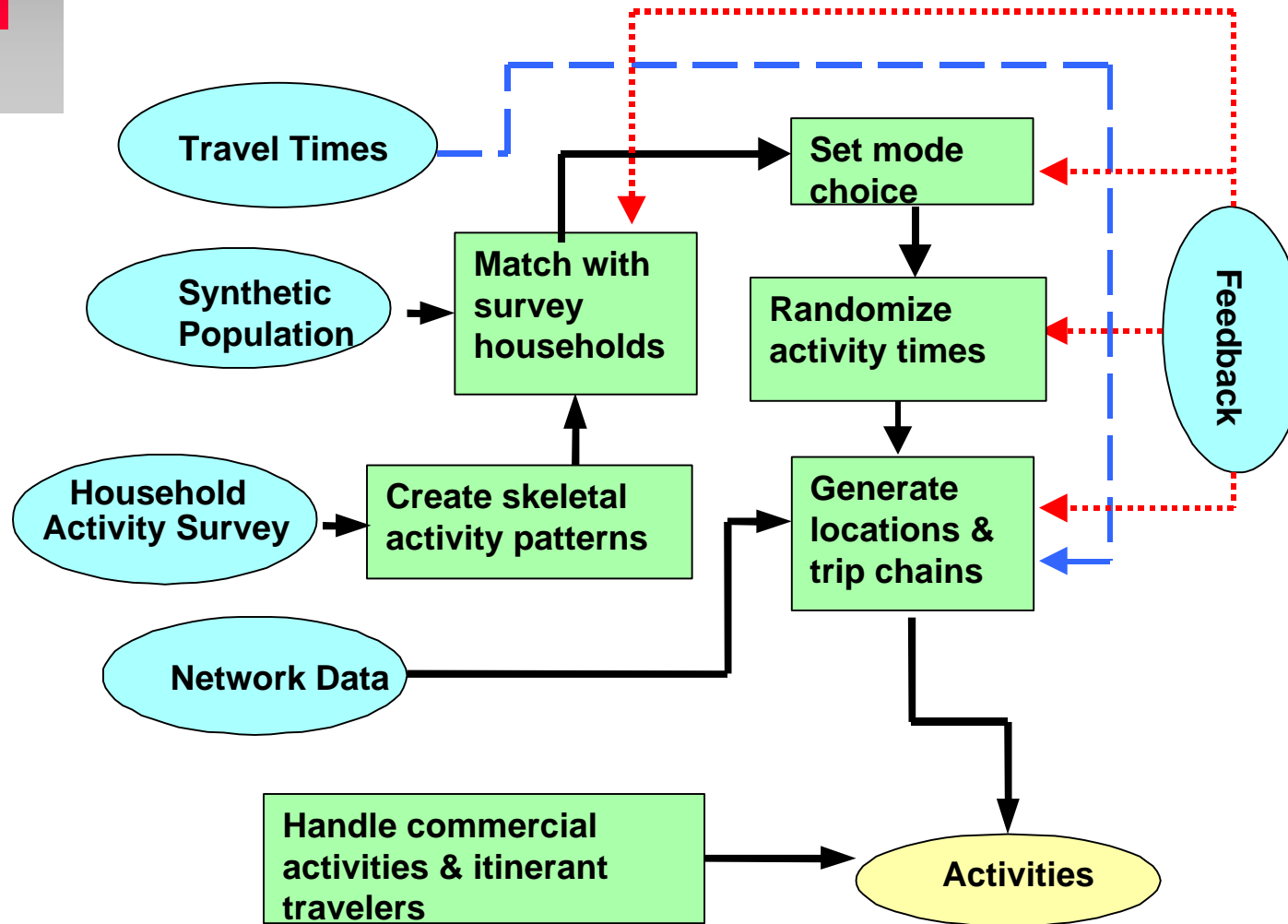
<http://transims.tsasa.lanl.gov>



Activity Generator

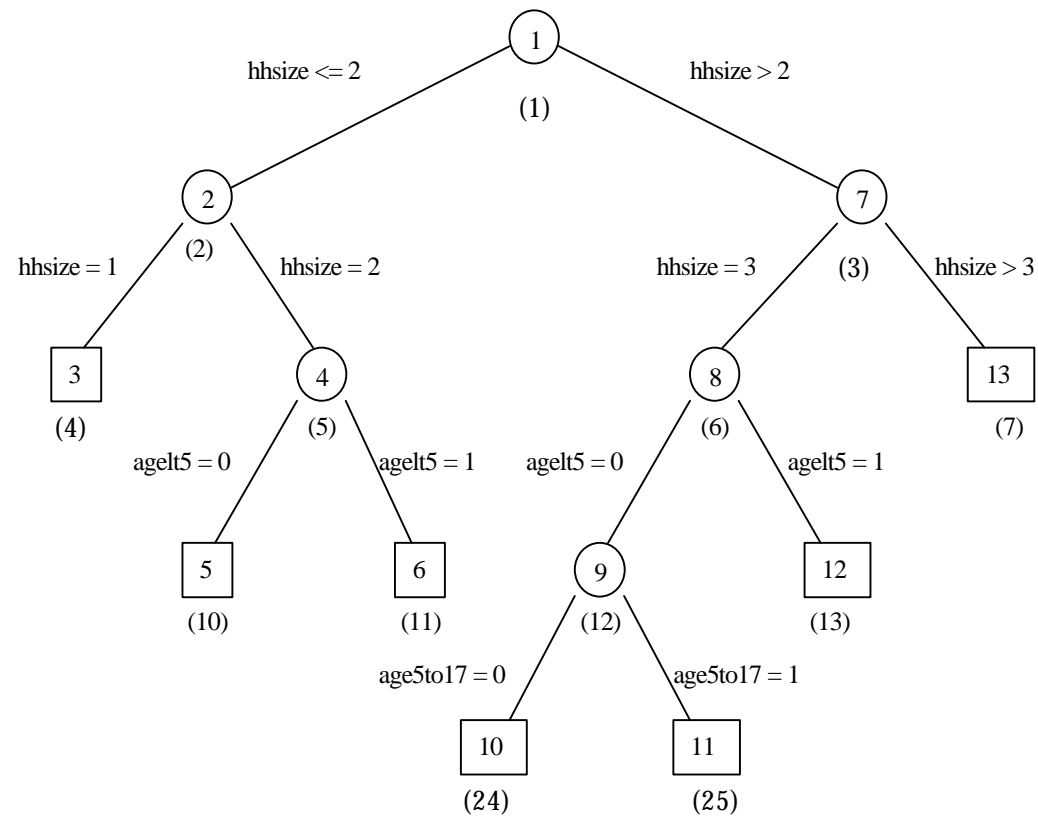
- *Generates an activity list for each person in the synthetic household using activity patterns from the survey households*
- *Assigns activity and time priorities that are used by the TRANSIMS Route Planner.*
- *Produces a TRANSIMS activity file that is used to generate travel demand.*
- *Reports problems that are encountered during the activity generation. Feedback can be used to correct the problems.*
- *Provides feedback mechanisms to change the activity list based on results from other TRANSIMS modules.*

Activity Generator Algorithm



Simple Binary Tree

*hhsiz*e | household size
agelt5 | number in household aged less than 5
age5to17 | number in household aged from 5 to 17



Classification Tree

WORKERS=0	WORKERS=1	WORKERS=2	WORKERS>2
HHSIZE=1 HHAGE<38.5 (34)(34,0) HHAGE>38.5 (319)(319,0) HHSIZE=2 HHAGE<53.5 INCOME<5.5 (25)(12,13) INCOME>5.5 (15)(12,3) HHAGE>53.5 (268)(267,1) HHSIZE>2 (32)(8,24)	HHSIZE=1 (705)(705,0) HHSIZE=2 A5-15=0 (304)(291,13) A5-15>0 (48)(0,48) HHSIZE=3 A5-15<=1 HHAGE<29.5 (18)(1,17) HHAGE>29.5 (89)(36,53) A5-15>1 (24)(0,24) HHSIZE=4 A5-15<=1 (73)(4,69) A5-15>1 (49)(0,47) HHSIZE>4 A5-15<=2 (40)(1,39) A5-15>2 (27)(0,27)	HHSIZE=2 (677)(677,0) HHSIZE=3 (248)(78,170) HHSIZE=4 ALT5=0 A26-45=0 (21)(8,13) A26-45>0 (134)(7,127) ALT5>0 (69)(0,69) HHSIZE>4 A5-15<=2 (49)(1,48) A5-15>2 HHDensity<1.29 (18)(0,18) HHDensity>1.29 (19)(0,19)	HHSIZE=3 (75)(75,0) HHSIZE=4 HHAGE<46.5 (28)(17,11) HHAGE>46.5 (24)(18,6) HHSIZE>4 (43)(10,33)

KEY

(32)(8,24)

32 households

8 with no nondriving children

24 with nondriving children

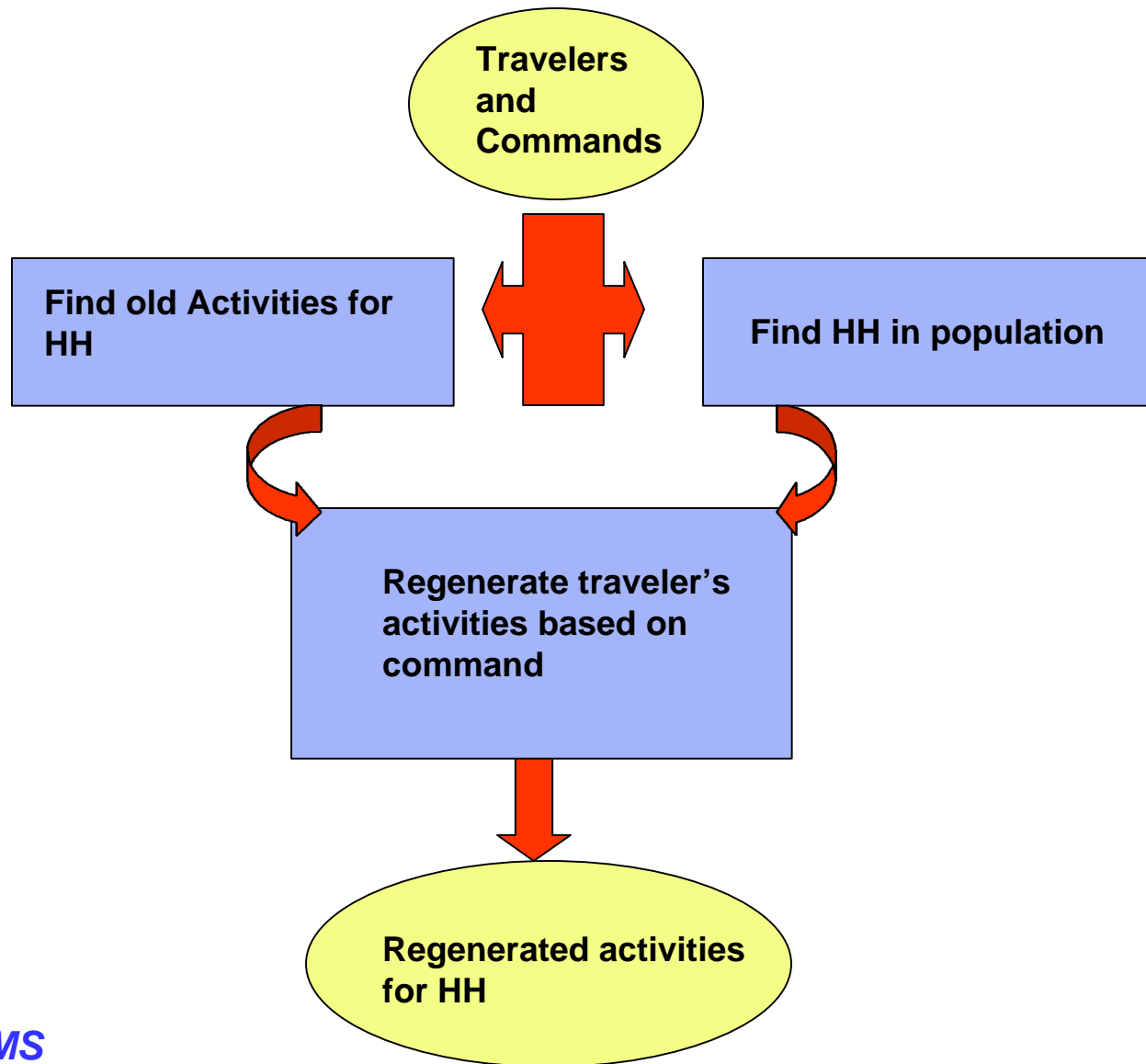
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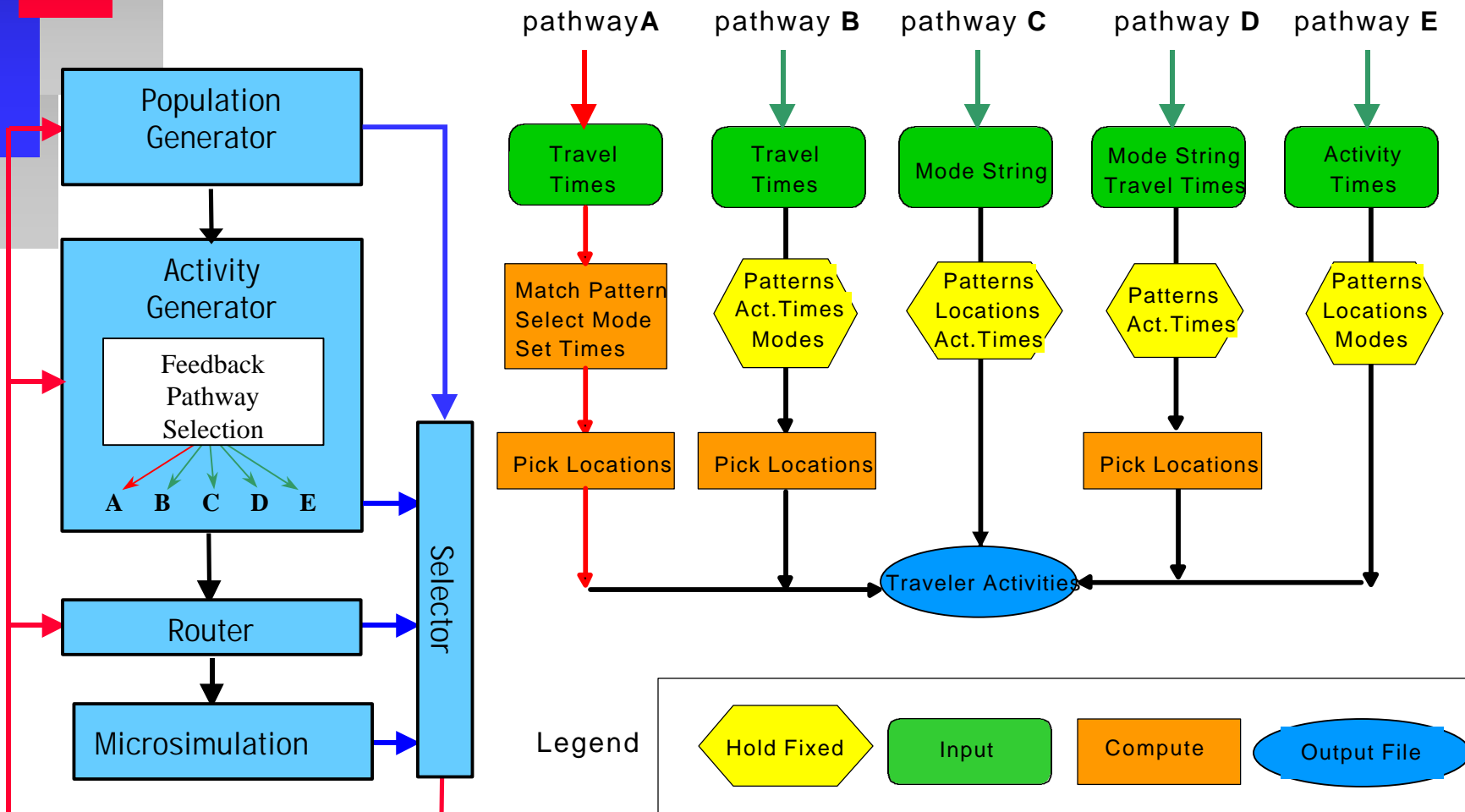
Intrahousehold Shared Rides

- *Derived from survey activity pattern*
- *Drivers and passengers matched based on start time of the activity*
- *Common locations forced at departure points for drivers and passengers*
- *Activity times adjusted –driver will wait for passengers to arrive*
- *Activities added to survey pattern in order to drop off/pickup passengers if necessary*

Activity Regenerator



Activity Regenerator Feedback



TRANSIMS



Activity Regenerator Feedback Pathways

- *Regenerate HH activity list by rematch with survey HH*
- *Change location*
 - *Make other activities consistent with location change on home to home tour or between anchor activities*
 - *Change for single activity only*
- *Change activity type*
- *Change time—start, end, and time distribution*
- *Change mode*
 - *Make other activities on home to home tour consistent.*
 - *Change for single activity only*
- *Change activity priority*
- *Change time priority*
- *Change activity times based on updated travel times*



Trips from Activity Generator in Portland

- *628,486 households, 1,515,320 persons*
- *199,508 households with shared rides*
- *Total trips all modes 5,748,358*
- *Uses mode splits from survey. Mode splits can be refined by feedback.*

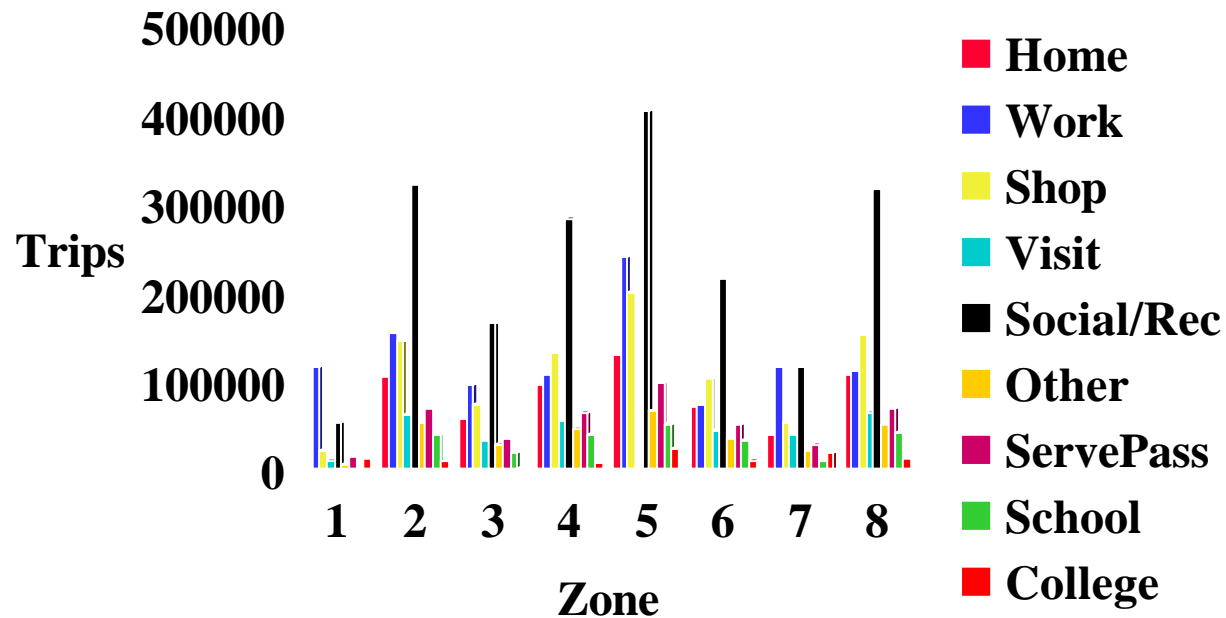
Mode Splits

Walk	Car	Transit	Light Rail	Bicycle	School Bus
501898	4613616	168038	27999	65087	142622

Trips Between Zones in Portland

- *8 analysis zones*
- *Distribution of trips by zone*

Trips by Activity Type





Runtime Parameters

- *Network size – 245,891 activity locations*
- *Travel analysis zones – 1,292*
- *1,515,320 persons, 7,349,437 activities, file size, 800 megabytes*
- *Runtime on 500 MHz Pentium III - ~4 hours*
- *Memory Usage - ~300 megabytes*